



446016

**SITE ASSESSMENT REPORT
FOR
2100 S. KOSTNER SITE
CHICAGO, COOK COUNTY, ILLINOIS
TDD: S05-9602-002
PAN: 6F0201SIT0**

February 28, 1996

Prepared for:

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Emergency and Enforcement Response Branch
77 West Jackson Boulevard
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Date: 2/28/96

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Date: 2/28/96

Approved by: Thomas Kouris
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Date: 2/28/96



ecology and environment, inc.

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1. INTRODUCTION

The United States Environmental Protection Agency (U.S. EPA) has tasked the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E), under Technical Direction Document (TDD) S05-9602-002, to assess site conditions and threats to human health and the environment at the 2100 S. Kostner site located in Chicago, Cook County, Illinois.

2. BACKGROUND

2.1 SITE DESCRIPTION

The 2100 S. Kostner site is located in Chicago, Cook County, Illinois. The site occupies approximately 5.5 acres near the intersection of Kostner Avenue and Cermak Road (Figure 2-1). The site includes approximately 52,000 cubic yards of construction and demolition debris made up of soil, concrete, asphalt, brick, wood, and miscellaneous metal and plastic scrap.

The debris is arranged in a series of irregular shaped, interconnected piles situated on a paved base. The debris does not appear to extend beneath the surrounding grade. The perimeter of the waste pile measures 550 feet on the northwest side, 300 feet on the east side, and 520 feet on the south side; the mean height of the pile is approximately 10 feet. A wide path on the east side provides access to the top of the pile. The site is surrounded by a locked chain-link and barbed wire fence (Figure 2-2).

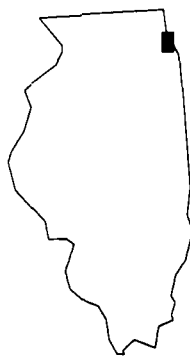
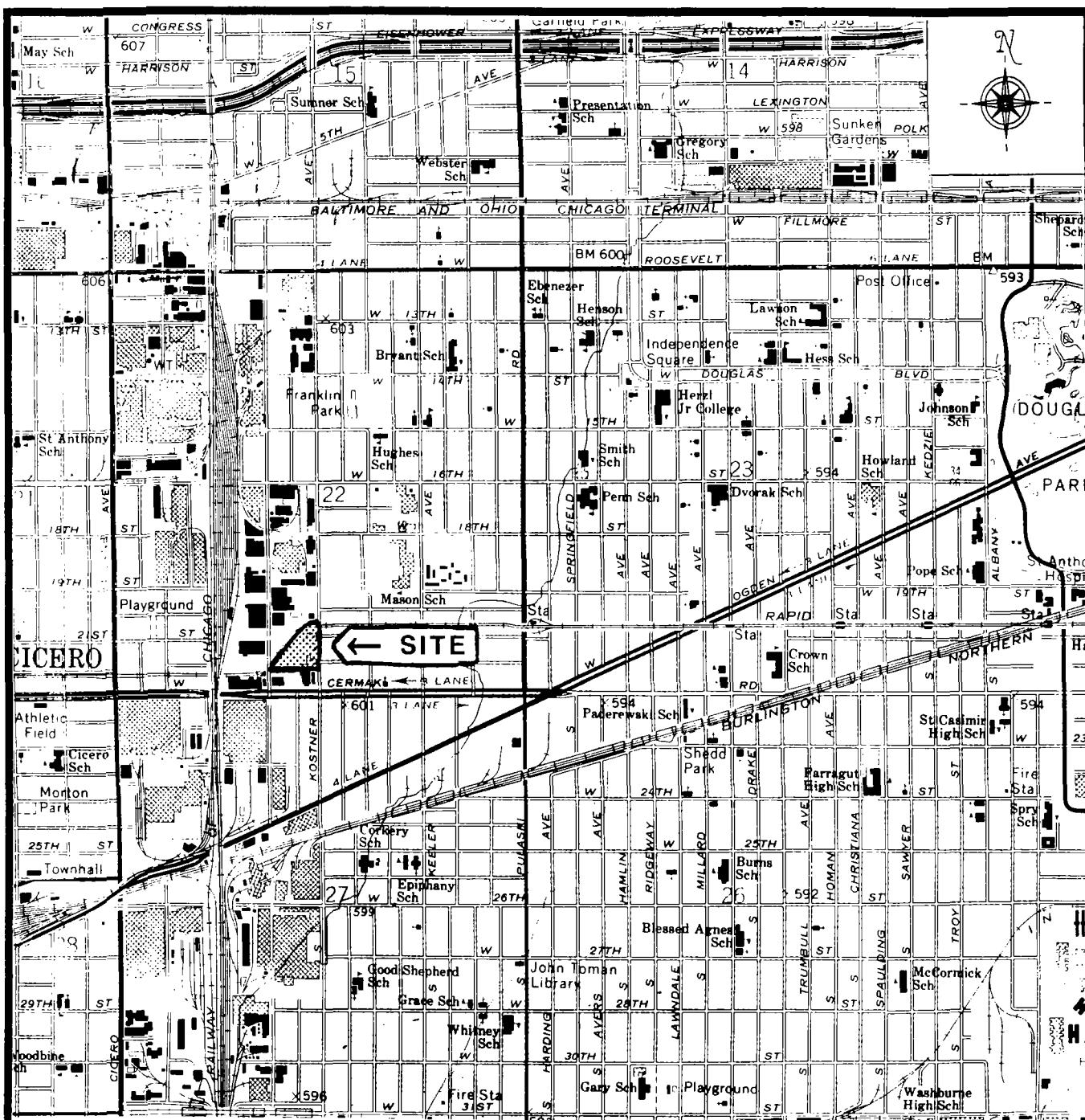
The site is situated in a mixed residential, industrial, and commercial development. A commuter rail line runs adjacent to the north and west sides of the site. Several manufacturing facilities and a trucking terminal are located beyond the rail lines. A small warehouse and carwash are located south of the site. Occupied homes are located directly east of the site, on Kostner Avenue.

2.2 SITE HISTORY

The site was formerly operated as an open dump for construction and demolition debris by the Krisjon Construction Company, and MCC Contractors, Inc. The site is currently inactive. The site was owned by John Christopher while the dumping occurred.

The dumping occurred during the 1980s, however, precise information on the period of dumping is not available. The United States Geological Survey map for the site area indicated that two buildings were located on site in 1980; these buildings are no longer standing. Information on the use and ownership of these buildings is not available.

In 1994, U.S. EPA removed approximately 20 drums of paint waste and other materials from the site.



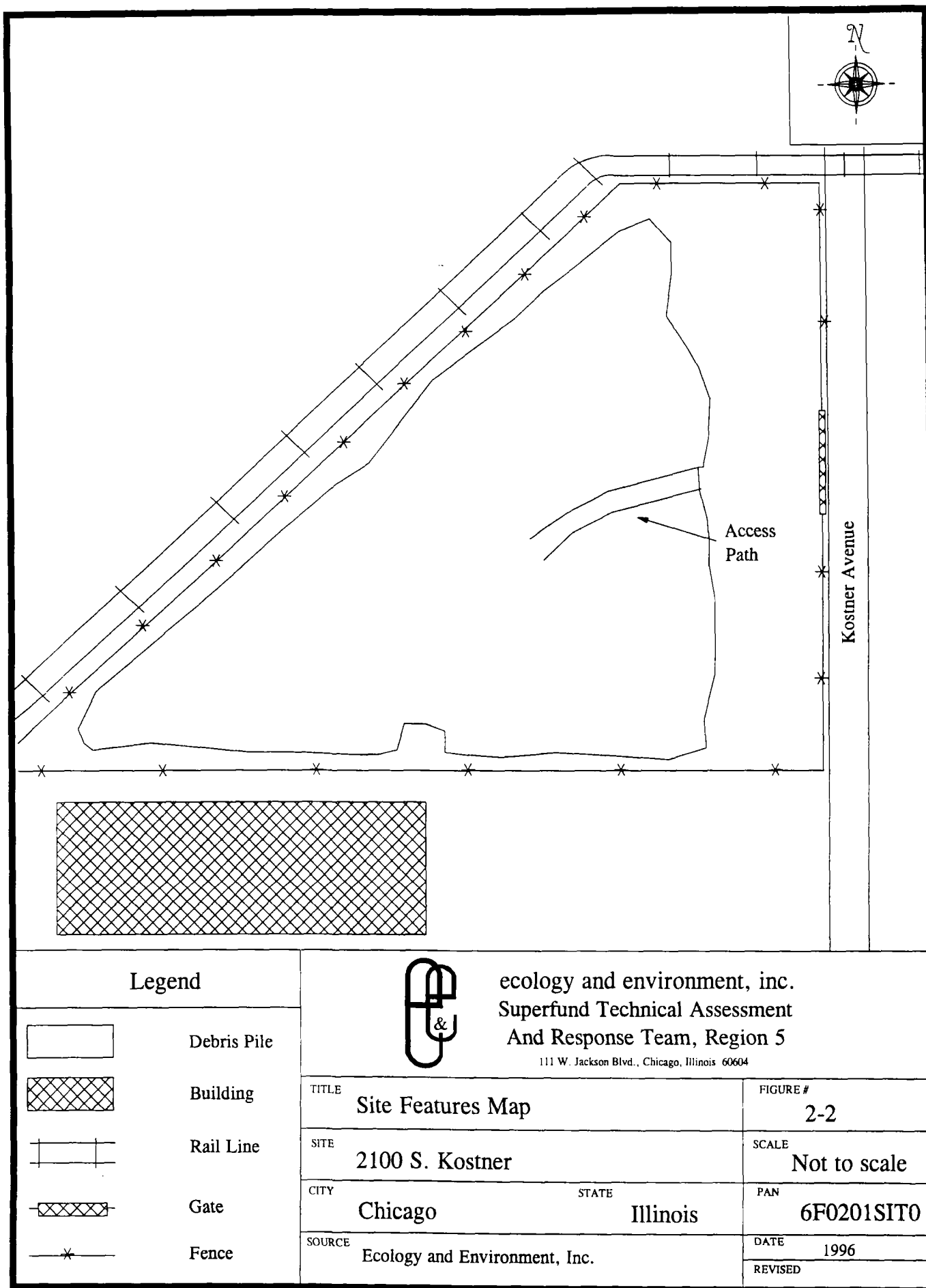
Quadrangle Location



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Superfund Technical Assessment
And Response Team, Region 5

111 W. Jackson Blvd., Chicago, Illinois 60604

TITLE	Site Location Map	FIGURE #	2-1
SITE	2100 S. Kostner	SCALE	1:24,000
CITY	Chicago	STATE	Illinois
SOURCE	U.S.G.S 7.5 Minute Series Topographic Map Englewood, IL, Quadrangle.	PAN	6F0201SIT0
		DATE	1963
		REVISED	1980



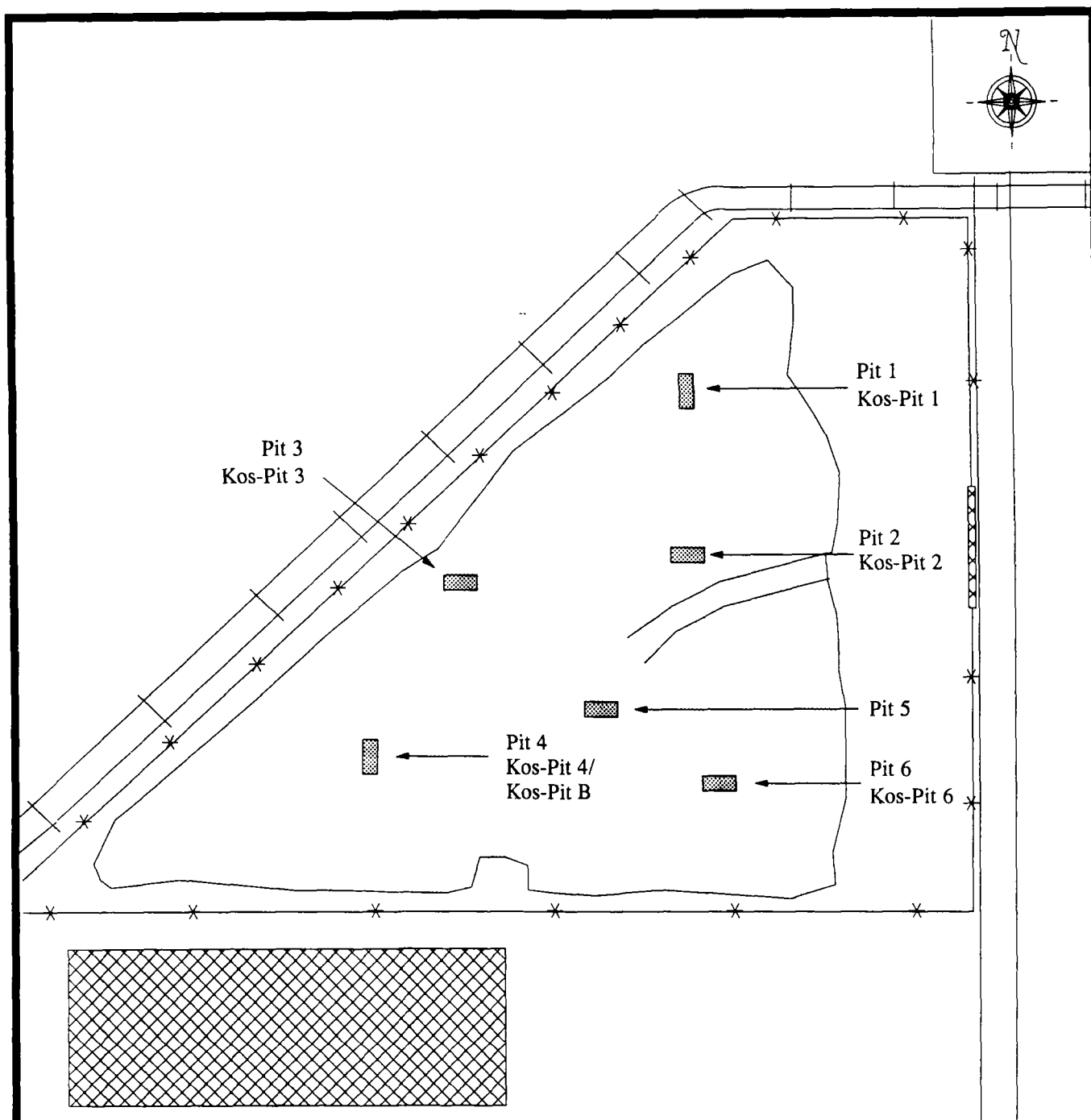
3. SITE ASSESSMENT


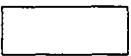

On February 8, 1996, START members (STARTMs) Donovan Robin and Karen Rydzewski conducted a site assessment of the 2100 S. Kostner site. They were accompanied by U.S. EPA's On-Scene Coordinator (OSC) Brad Benning and U.S. EPA Geologist John Ular. Moses Walker of the Chicago Department of the Environment was also present during the site assessment. E & E START retained the services of R. Carlson and Sons, Inc., of Mokena, Illinois, for excavation of test pits. Refer to Appendix A for photodocumentation of site assessment activities.

Six test pits were excavated on site. Five of the test pit locations were selected to obtain representative soil samples and visual observations of areas throughout the waste piles and one location was selected based on magnetometer survey results. A Kobelco SK200 excavator was used to excavate test pits approximately 10 feet long and 4 feet wide. Depth of the pits was variable and depended upon the ability of the excavator to penetrate the material encountered.

The material excavated was placed in stockpiles, visually examined, and screened for volatile organic compounds (VOCs) using a flame ionizing detector (FID) in six to ten areas of the pile. START collected soil samples from five of the pits. The soil samples were collected using a stainless steel spoon and bowl to obtain a homogenized composite soil sample from six to ten locations of the stockpiled soil. The test pits were backfilled following collection of the sample. Refer to Figure 3-1 for locations of the test pits and soil samples, and Table 3-1 for further description of the test pits and samples.

The samples were picked up on February 9, 1996, by a representative of Heritage Laboratories of Romeoville, Illinois. The samples were analyzed for toxicity characteristic leachate procedure (TCLP) metals, TCLP VOCs, TCLP semivolatile organic compounds (SVOCs), and total polychlorinated biphenyls (PCBs) under analytical TDD S05-9602-003. A fourteen-day turnaround was requested for an Office of Solid Waste and Emergency Response (OSWER) Level II quality assurance/quality control (QA/QC) data package.



Legend		 ecology and environment, inc. Superfund Technical Assessment And Response Team, Region 5 <small>111 W. Jackson Blvd., Chicago, Illinois 60604</small>	
	Debris Pile		
	Test Pit	TITLE	Test Pit and Sample Locations Map
Pit 1	Test Pit Designation	SITE	2100 S. Kostner
Kos-Pit 1	Sample Designation	CITY	Chicago
		STATE	Illinois
		SOURCE	Ecology and Environment, Inc.
		FIGURE #	3-1
		SCALE	Not to scale
		PAN	6F0201SIT0
		DATE	1996
		REVISED	

<p align="center">Table 3-1</p> <p align="center">TEST PIT DESCRIPTIONS AND SAMPLE SUMMARY</p> <p align="center">2100 S. KOSTNER SITE</p> <p align="center">CHICAGO, COOK COUNTY, ILLINOIS</p> <p align="center">FEBRUARY 8, 1996</p>					
Pit Designation	Sample Designation	Pit Dimensions (l x w x d) (feet)	Pit Location/ Coordinates	FID readings above background (ppm)	Description of Material Excavated
Pit 1	Kos-Pit 1	10 x 4 x 13	North side of pile. N 41° 51' 10.6" W 87° 44' 09.8"	0	Loose, dark brown soil mixed with rocks, brick, wood and metal debris, no unusual odors or colors.
Pit 2	Kos-Pit 2	10 x 4 x 12	Northeast side of pile. N 41° 51' 10.9" W 87° 44' 09.0"	3-5	Loose, dark brown soil mixed with rocks, brick, and metal debris, no unusual odors or colors.
Pit 3	Kos-Pit 3	10 x 4 x 9	West side of pile. N 41° 51' 09.2" W 87° 44' 11.1"	0	Loose, sandy, light to medium brown soil mixed with rock and concrete debris, no unusual odors or colors.
Pit 4	Kos-Pit 4/ Kos-Pit B (duplicate)	10 x 4 x 15	South side of pile. N 41° 51' 09.7" W 87° 44' 10.5"	0-2	Loose, dark brown-black soil mixed with rock, concrete debris and metal reinforcement bars, no unusual odors or colors.
Pit 5	NA	10 x 4 x 10	East side of pile. ND	0-25	Dark brown soil mixed with black clay, large asphalt and concrete fragments, metal debris, faint motor-oil smell and black stains observed.
Pit 6	Kos-Pit 6	6 x 4 x 4	Southeast side of pile. N 41° 51' 08.6" W 87° 44' 05.4"	0	Black soil mixed with pulverized asphalt and large asphalt fragments, no unusual colors or odors.

Key:

NA = Not applicable.

ND = Not determined.

FID = Flame ionizing detector.

ppm = Parts per million.

l = length.

w = width.

d = depth.

Source: E & E, Inc., START, February 8, 1996, Field Logbook, 2100 S. Kostner Site.

4. ANALYTICAL RESULTS

Analytical results of composite soil samples collected from test pits at the 2100 S. Kostner site indicate that the material disposed at the site does not exhibit the characteristics of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Also, the material disposed on site does not exhibit levels of PCBs in excess of removal limits established by the Toxic Substances Control Act (TSCA). Analytical results are summarized in Table 4-1. The validated QA/QC package is included in Appendix B.

The RCRA hazardous waste criteria for toxicity of regulated metals, VOCs, and SVOCs is determined by the TCLP result. A material is considered a hazardous waste if the concentration of any regulated parameter exceeds the regulatory limits. TSCA has established a level of 50.0 milligrams per kilogram (mg/kg) as the removal action level for PCBs.

None of the samples results exceeded RCRA levels for hazardous waste or TSCA removal action levels.

<p align="center">Table 4-1</p> <p align="center">ANALYTICAL RESULTS</p> <p align="center">2100 S. KOSTNER SITE</p> <p align="center">CHICAGO, COOK COUNTY, ILLINOIS</p> <p align="center">FEBRUARY 8, 1996</p>						
Parameter	Sample Designation					
	Kos-Pit 1	Kos-Pit 2	Kos-Pit 3	Kos-Pit 4	Kos-Pit B ^a	Kos-Pit 6
TCLP Arsenic (mg/L)	ND	ND	ND	0.25	0.23	ND
TCLP Cadmium (mg/L)	0.03	0.007	0.01	0.01	0.01	ND
TCLP Lead (mg/L)	0.42	0.47	0.07	ND	ND	ND
Total Aroclor 1248 (mg/kg)	0.15	ND	ND	ND	ND	ND
Total Aroclor 1254 (mg/kg)	0.058 ^b	0.049 ^b	0.05 ^b	ND	ND	ND
Total Aroclor 1260 (mg/kg)	0.085	0.045	0.026	0.067	0.062	ND
TCLP VOCs (mg/L)	ND	ND	ND	ND	ND	ND
TCLP SVOCs (mg/L)	ND	ND	ND	ND	ND	ND

Key:

- ^a = Duplicate of sample Kos-Pit 4.
- ^b = Estimated value due to matrix interference.
- ND = Not detected.
- TCLP = Toxicity characteristics leaching procedure.
- mg/L = Milligrams per liter.
- mg/kg = Milligrams per kilogram.
- VOCs = Volatile organic compounds.
- SVOCs = Semivolatile organic compounds.

Source: Heritage Laboratories, February 16, 1996, Analytical Data Package, TDD: S05-9602-803, Romeoville, Illinois.

5. DISCUSSION OF POTENTIAL THREATS

Conditions present at the 2100 S. Kostner site do not warrant removal actions as set forth in paragraph (b) (2) of Section 300.415 of the National Oil and Hazardous Substances Contingency Plan (NCP). Analytical results of composite soil samples collected from test pits at the 2100 S. Kostner site indicate that the material disposed at the site does not exhibit the characteristics of hazardous waste as defined by RCRA. Also, the material disposed on site does not exhibit levels of PCBs in excess of removal limits established by TSCA.

6. REMOVAL COST ESTIMATE

Removal of the 52,000 cubic yards of construction and demolition debris material from the site to a permitted RCRA Subtitle D landfill would cost approximately \$ 1,678,000. The methods and costs are explained as follows: (please note this cost estimate does not include administrative or project management costs).

EXCAVATION

- Assuming use of one CAT 350 or equivalent excavator to load 40 trucks per day with 15 cubic yards (yd³) of debris.
- $15 \text{ yd}^3/\text{load} \times 60 \text{ loads/day} = 900 \text{ yd}^3/\text{day removed}.$
- $52,000 \text{ yd}^3/900 \text{ yd}^3/\text{day} = 58 \text{ days of excavation}.$
- $58 \text{ days} \times \$ 2,000/\text{day machine rental and labor} = \$ 116,000 \text{ total excavation cost}.$

TRANSPORTATION

- Assuming use of 6 to 7 trucks to transport a total of 60 loads per day to a facility within 25 miles of Chicago.
- $58 \text{ days} \times 60 \text{ loads/day} = 3,480 \text{ loads}.$
- $\$ 150/\text{load} \times 3,480 \text{ loads} = \$ 522,000 \text{ total transportation cost}.$

DISPOSAL

- Assume all material is nonhazardous, also assume use of a permitted subtitle D facility.
- $\$ 20/\text{yd}^3 \times 52,000 \text{ yd}^3 = \$ 1,040,000 \text{ total disposal cost}.$

APPENDIX A

PHOTODOCUMENTATION



Date: 02/08/96 Time: 0925 Frame: 01 Direction: North
 Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: D. Robin
 Comments: Test Pit 1, view of excavated material.



Date: 02/08/96 Time: 0925 Frame: 02 Direction: North
 Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: D. Robin
 Comments: Test Pit 1, view of excavation.



Date: 02/08/96 Time: 0955 Frame: 04 Direction: East
 Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: D. Robin
 Comments: Test Pit 2, view of excavated material.



Date: 02/08/96 Time: 0955 Frame: 05 Direction: West
 Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: D. Robin
 Comments: Test Pit 2, view of excavation.



Date: 02/08/96 Time: 1022 Frame: 07 Direction: South
 Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: K. Rydzewski
 Comments: Test Pit 3, view of excavated material, and sample collection.



Date: 02/08/96 Time: 1022 Frame: 08 Direction: West
 Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: K. Rydzewski
 Comments: Test Pit 3, view of excavation.



Date: 02/08/96 Time: 1055 Frame: 12 Direction: West
 Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: K. Rydzewski
 Comments: Test Pit 4, view of excavation.



Date: 02/08/96 Time: 1055 Frame: 14 Direction: West
 Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: K. Rydzewski
 Comments: Test Pit 4, view of excavated material.



Date: 02/08/96 Time: 1114 Frame: 15 Direction: West
 Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: K. Rydzewski
 Comments: Test Pit 5, view of excavation.



Date: 02/08/96 Time: 1114 Frame: 17 Direction: Southwest
 Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: K. Rydzewski
 Comments: Test Pit 5, view of excavated material.



Date: 02/08/96 Time: 1132 Frame: 18 Direction: South
Site Name: 2100 S. Kostner TDD: S05-9602-002 Photographer: K. Rydzewski
Comments: Test Pit 6, excavation of test pit.

APPENDIX B

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ANALYTICAL RESULTS



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M E M O R A N D U M

DATE: February 23, 1996

TO: Donovan Robin, START Project Manager, E & E,
Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager,
E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, Alternate START Leader, E & E,
Chicago, Illinois

SUBJECT: Organic Data Quality Review for Toxicity
Characteristic Leaching Procedure (TCLP) Volatile
Organic Compounds, 2100 S. Kostner, Chicago, Cook
County, Illinois

REFERENCE: Project TDD S05-9602-002 Analytical TDD S05-9602-803
Project PAN 6F0201SIQ0 Analytical PAN 6FAC01TAA0

The data quality assurance (QA) review of six soil samples collected from the 2100 S. Kostner site is complete. The samples were collected on February 8, 1996, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to Heritage Laboratories, Romeoville, Illinois, for analyses. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Methods 1311 and 8260.

Sample Identification

<u>START</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
KOS-PIT 1	C175475
KOS-PIT 2	C175476
KOS-PIT 3	C175477
KOS-PIT 4	C175478
KOS-PIT 6	C175479
KOS-PIT B	C175480

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on February 8, 1996, and analyzed on February 12, 1996. This is within the 14-day holding time limit.

II. Gas Chromatography/Mass Spectrometry (GC/MS) Tuning: Acceptable

GC/MS tuning to meet ion abundance criteria using bromofluorobenzene (BFB) were acceptable and samples were analyzed within 12 hours of BFB tuning.

III. Calibrations:

• Initial Calibration: Acceptable

A five-point initial calibration was performed prior to analysis. All average response factors were greater than 0.05. The percent relative standard deviations (%RSDs) between response factors were less than 30% for all target compounds.

• Continuing Calibration: Acceptable

The percent differences of the response factors were less than 25%, as required for detected target compounds.

IV. Blank: Acceptable

A method blank was analyzed with the samples. No target compounds or contaminants were detected in the blank.

V. Internal Standards: Acceptable

The areas of the internal standards in the samples were within -50% to +100% of the associated calibration check standard. The retention time of the internal standard was within the 30-second control limit.

VI. Compound Identification: Not Applicable

None of the TCLP volatile organic compounds were detected in the samples.

2100 S. Kostner
Project TDD S05-9602-002
Analytical TDD S05-9602-803
Page 3

VII. Additional QC Checks: Acceptable

The recoveries of the surrogates used in the samples and blank were within the laboratory-established guidelines.

VIII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 5.0, VOAs By GC/MS analysis. Based upon the information provided, the data are acceptable for use.



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M E M O R A N D U M

DATE: February 23, 1996

TO: Donovan Robin, START Project Manager, E & E,
Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager,
E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, Alternate START Leader, E & E,
Chicago, Illinois

SUBJECT: Organic Data Quality Review for Toxicity
Characteristic Leaching Procedure (TCLP) Semivolatile
Organic Compounds, 2100 S. Kostner, Chicago, Cook
County, Illinois

REFERENCE: Project TDD S05-9602-002 Analytical TDD S05-9602-803
Project PAN 6F0201SIQ0 Analytical PAN 6FAC01TAA0

The data quality assurance (QA) review of six soil samples collected from the 2100 S. Kostner site is complete. The samples were collected on February 8, 1996, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to Heritage Laboratories, Romeoville, Illinois, for analyses. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Methods 1311 and 8270.

Sample Identification

<u>START</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
K0S-PIT 1	C175475
K0S-PIT 2	C175476
K0S-PIT 3	C175477
K0S-PIT 4	C175478
K0S-PIT 6	C175479
K0S-PIT B	C175480

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on February 8, 1996, extracted on February 12, 1996, and analyzed on February 13, 1996. This is within the 14-day holding time limit, from collection to extraction, and 40-day limit from extraction to analysis.

II. Gas Chromatography/Mass Spectrometry (GC/MS) Tuning: Acceptable

GC/MS tuning to meet ion abundance criteria using decafluorotriphenylphosphine (DFTPP) were acceptable and samples were analyzed within 12 hours of DFTPP tuning.

III. Calibrations:

• Initial Calibration: Acceptable

A five-point initial calibration was performed prior to analysis. All average response factors were greater than 0.05. The percent relative standard deviations (%RSDs) between response factors were less than 30% for all target compounds.

• Continuing Calibration: Acceptable

The percent differences of the response factors were less than 25%, as required for detected target compounds.

IV. Blank: Acceptable

A method blank was analyzed with the samples. No target compounds or contaminants were detected in the blank.

V. Internal Standards: Acceptable

The areas of the internal standards in the samples were within -50% to +100% of the associated calibration check standard. The retention time of the internal standard was within the 30-second control limit.

VI. Compound Identification: Not Applicable

None of the TCLP semivolatile organic compounds were detected in the samples.

2100 S. Kostner
Project TDD S05-9602-002
Analytical TDD S05-9602-803
Page 3

VII. Additional QC Checks: Acceptable

The recoveries of the surrogates used in the samples and blank were within the laboratory-established guidelines.

VIII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 4.0, BNAs By GC/MS analysis. Based upon the information provided, the data are acceptable for use.



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M E M O R A N D U M

DATE: February 26, 1996

TO: Donovan Robin, START Project Manager, E & E,
Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager,
E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, Alternate START Leader, E & E,
Chicago, Illinois

SUBJECT: Organic Data Quality Review for Polychlorinated
Biphenyls (PCBs), 2100 S. Kostner, Chicago, Cook
County, Illinois

REFERENCE: Project TDD S05-9602-002 Analytical TDD S05-9602-803
Project PAN 6F0201SIQ0 Analytical PAN 6FAC01TAA0

The data quality assurance (QA) review of six soil samples collected from the 2100 S. Kostner site is complete. The samples were collected on February 8, 1996, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to Heritage Laboratories, Romeoville, Illinois, for analyses. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 8080.

Sample Identification

<u>START</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
K0S-PIT 1	C175475
K0S-PIT 2	C175476
K0S-PIT 3	C175477
K0S-PIT 4	C175478
K0S-PIT 6	C175479
K0S-PIT B	C175480

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on February 8, 1996, extracted on February 13, 1996, and analyzed on February 13 and 14, 1996. This is within the 14-day holding time limit, from collection to extraction, and 40-day limit from extraction to analysis.

II. Instrument Performance: Acceptable

The chromatographic resolution was adequate in the standard and sample chromatograms. Surrogate retention times were consistent in samples and standards.

III. Calibrations:

• Initial Calibration: Acceptable

A five-point initial calibration was performed prior to analysis. The percent relative standard deviations (%RSDs) between response factors were less than 20% for all detected PCBs.

• Continuing Calibration: Acceptable

The percent differences of the response factors were less than 15%, as required for detected target compounds.

IV. Blank: Acceptable

A method blank was analyzed with the samples. No target compounds or contaminants were detected in the blank.

V. Internal Standards: Acceptable

The areas of the internal standards in the samples were within -50% to +100% of the associated calibration check standard. The retention time of the internal standard was within the 30-second control limit.

VI. Compound Identification: Acceptable

The chromatographic patterns of the samples matched those in standard chromatograms.

VII. Additional QC Checks: Qualified

The recoveries of the surrogates used in the samples C175478 and C175479 were below the laboratory-established guidelines. The positive result in sample C175478 was qualified as estimated, and flagged "J".

VIII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 7.0, PCBs. Based upon the information provided, the data are acceptable for use.

Data Qualifiers and Definitions:

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the required detection limits or quality control criteria were not met.



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M E M O R A N D U M

DATE: February 26, 1996

TO: Donovan Robin, START Project Manager, E & E,
Chicago, Illinois

FROM: David Hendren, START Analytical Services Manager,
E & E, Chicago, Illinois

THROUGH: Mary Jane Ripp, Alternate START Leader, E & E,
Chicago, Illinois

SUBJECT: Inorganic Data Quality Review for Toxicity
Characteristic Leaching Procedure (TCLP) Metals, 2100
S. Kostner, Chicago, Cook County, Illinois

REFERENCE: Project TDD S05-9602-002 Analytical TDD S05-9602-803
Project PAN 6F0201SIQ0 Analytical PAN 6FAC01TAA0

The data quality assurance (QA) review of six soil samples collected from the 2100 S. Kostner site is complete. The samples were collected on February 8, 1996, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to Heritage Laboratories, Romeoville, Illinois, for analyses. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Methods 1311, 6010, and 7470 (for mercury).

Sample Identification

START Identification No.

Laboratory Identification No.

K0S-PIT 1	C175475
K0S-PIT 2	C175476
K0S-PIT 3	C175477
K0S-PIT 4	C175478
K0S-PIT 6	C175479
K0S-PIT B	C175480

Data Qualifications:

I. Sample Holding Time: Acceptable

The samples were collected on February 8, 1996, and analyzed on February 13 and 15, 1996. Analyses for mercury were performed on February 14, 1996. This is within the six-month holding time limit (28 days for mercury).

II. Calibration:

• Initial Calibration: Acceptable

Recoveries for the initial calibration verification were within 90 to 110% (80 to 120% for mercury), as required. The correlation coefficient for mercury exceeded 0.995.

• Continuing Calibration: Acceptable

All analytes included in the continuing calibration verification standard were within 90 to 110% (80 to 120% mercury), as required.

III. Blanks: Acceptable

Calibration and preparation blanks were analyzed with each analytical batch. No target analytes were detected in the blanks.

IV. Instrument Interference Check Samples (ICSS): Acceptable

The ICSSs were analyzed as required and recoveries were within acceptable limits.

V. Overall Assessment of Data For Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990) Data Validation Procedures, Section 3.0, Metallic Inorganic Parameters. Based upon the information provided, the data are acceptable for use.

C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEONVILLE, IL 60441 (708)378-1600	Received 09-FEB-96	Project	Lab ID C175475
	Complete 22-FEB-96	PO Number E & E	
	Printed 22-FEB-96	Sampled 08-FEB-96 09:40	

Report To D. HENDREN ECOLOGY & ENVIRONMENT, INC. 77 WEST JACKSON BOULEVARD CHICAGO, IL 60604	Bill To ACCOUNTS PAYABLE ECOLOGY & ENVIRONMENT, INC. 111 WEST JACKSON BLVD. (12TH FLOOR) CHICAGO, IL 60604
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Sample Description CLIENT ID: PIT 1 ANALYTICAL TDD: S05-9602-803 SAMPLE I.D.: KOS-PIT 1 COMPOSITE

TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311			
Analyst: C. HERRO		Analysis Date: 09-FEB-96	
		Test: P107.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	101.3		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	101.3		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	9.31		Std. Units
ADJUSTED PH	1.64		Std. Units
BUFFER SOLUTION PH	4.93		Std. Units
FINAL PH	5.69		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	21		Degrees C
INITIAL TIME	05.30		HRS
FINAL TIME	09.30		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: C. HERRO		Analysis Date: 12-FEB-96	
		Test: P130.8.0	
Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0			
Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		ml

ARSENIC ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M603.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0476		Conc
SAMPLE + ADD 1	0.9755		Conc
DILUTION	1		

BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M604.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
BARIUM	BDL	2.0	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.7849		Conc
SAMPLE + ADD 1	1.694		Conc
DILUTION	1		

CADMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M608.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.03	0.005	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0306		Conc
SAMPLE + ADD 1	0.9606		Conc
DILUTION	1		

CHROMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M610.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.01	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0019		Conc
SAMPLE + ADD 1	0.9509		Conc
DILUTION	1		

LEAD ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M616.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
LEAD	0.42	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.4172		Conc
SAMPLE + ADD 1	1.345		Conc
DILUTION	1		

SELENIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M628.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SELENIUM	BDL	0.10	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0067		Conc
SAMPLE + ADD 1	1.006		Conc
DILUTION	1		

SILVER ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M630.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SILVER	BDL	0.02	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	-0.0070		Conc
SAMPLE + ADD 1	0.744		Conc
DILUTION	1		

MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A

Analyst: T. NOHA

Analysis Date: 12-FEB-96

Test: P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	10		mL
FINAL VOLUME	100		mL

MERCURY CVAA (1 POINT MSA) SW846-7470A

Analyst: T. NOHA

Analysis Date: 14-FEB-96

Instrument: CVAA

Test: M620.6.0

Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
MERCURY	BDL	0.005	mg/L
ADDITION 1	0.01		mg/L
SAMPLE	-0.003		Conc
SAMPLE + ADD 1	0.0106		Conc
DILUTION	1		

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B

Analyst: H. QIAN

Analysis Date: 12-FEB-96

Test: P233.4.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	200		mL
FINAL VOLUME	1		mL

TCLP SEMIVOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8270B

Analyst: H. QIAN

Analysis Date: 13-FEB-96 13:22

Instrument: GC/MS SVOA

Test: 0514.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B P233.4.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	50	ug/L
2,4-DINITROTOLUENE	BDL	50	ug/L
HEXACHLOROBENZENE	BDL	50	ug/L
HEXACHLOROBUTADIENE	BDL	50	ug/L
HEXACHLOROETHANE	BDL	50	ug/L
NITROBENZENE	BDL	50	ug/L

Parameter	Result	Det. Limit	Units
PYRIDINE	BDL	250	ug/L
2-METHYLPHENOL (O-CRESOL)	BDL	130	ug/L
3-METHYLPHENOL (M-CRESOL)	BDL	130	ug/L
4-METHYLPHENOL (P-CRESOL)	BDL	130	ug/L
PENTACHLOROPHENOL	BDL	250	ug/L
2,4,5-TRICHLOROPHENOL	BDL	130	ug/L
2,4,6-TRICHLOROPHENOL	BDL	130	ug/L
...			
SURROGATE RECOVERY			

2-FLUOROPHENOL	64		% Rec
PHENOL-D5	58		% Rec
NITROBENZENE-D5	82		% Rec
2-FLUOROBIPHENYL	82		% Rec
2,4,6-TRIBROMOPHENOL	81		% Rec
TERPHENYL-D14	96		% Rec

1:1 dilution

3 & 4 Methyl Phenol co-elute so identification is tentative.

ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311

Analyst: T. MCDEVITT, JR.

Analysis Date: 09-FEB-96

Test: P108.1.0

Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	25.3		Grams
LIQUID FRACTION (GRAMS)	NA		Grams
LIQUID PORTION	NA		mL
EXTRACTED SAMPLE	25.3		Grams
PHASE 0 VOLUME (REP 0)	477		mL
PHASE 1 VOLUME (REP 1)	NA		mL
FINAL PH	5.75		Std. Units

TCLP VOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8240B

Analyst: G. SWANEY

Analysis Date: 12-FEB-96 13:38

Instrument: GC/MS VOA

Test: 0513.3.0

Prep: ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311 P108.1.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	50	ug/L
CARBON TETRACHLORIDE	BDL	50	ug/L
CHLOROBENZENE	BDL	50	ug/L
CHLOROFORM	BDL	50	ug/L
1,2-DICHLOROETHANE	BDL	50	ug/L
1,1-DICHLOROETHYLENE	BDL	50	ug/L
METHYL ETHYL KETONE	BDL	100	ug/L
TETRACHLOROETHYLENE	BDL	50	ug/L
TRICHLOROETHYLENE	BDL	50	ug/L
VINYL CHLORIDE	BDL	100	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	98		% Rec
TOLUENE-D8	96		% Rec
4-BROMOFLUOROBENZENE	96		% Rec

1:10 dilution

SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD)

Analyst: S. BUSSEY

Analysis Date: 13-FEB-96

Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.4		Grams
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080A

Analyst: S. BUSSEY

Analysis Date: 14-FEB-96

Instrument: GC/ECD

Test: 0301.2.0

Prep: SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD) P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.017	mg/kg
PCB AROCHLOR 1221	BDL	0.017	mg/kg
PCB AROCHLOR 1232	BDL	0.017	mg/kg
PCB AROCHLOR 1242	BDL	0.017	mg/kg
PCB AROCHLOR 1248	0.15	0.017	mg/kg
PCB AROCHLOR 1254	* 0.058	0.017	mg/kg
PCB AROCHLOR 1260	0.085	0.017	mg/kg
PCB AROCHLOR 1262	BDL	0.017	mg/kg

**Arochlor 1254 is estimated due to interferences from Arochlors 1248 & 1260*

Sample Comments

* See Note for Parameter
BDL Below Detection Limit
NA Not Applicable

*This Certificate shall not be reproduced, except in full,
without the written approval of the lab.*

Approved :



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	Received	Project	Lab ID
	09-FEB-96		C175476
	Complete	PO Number	
	22-FEB-96	E & E	
	Printed	Sampled	
	22-FEB-96	08-FEB-96 09:50	

Report To D. HENDREN ECOLOGY & ENVIRONMENT, INC. 77 WEST JACKSON BOULEVARD CHICAGO, IL 60604	Bill To ACCOUNTS PAYABLE ECOLOGY & ENVIRONMENT, INC. 111 WEST JACKSON BLVD. (12TH FLOOR) CHICAGO, IL 60604
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Sample Description CLIENT ID: PIT 2 ANALYTICAL TDD: S05-9602-803 SAMPLE I.D.: KOS-PIT 2 COMPOSITE

TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311			
Analyst: C. HERRO		Analysis Date: 09-FEB-96	
		Test: P107.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	102.2		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	102.2		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	9.13		Std. Units
ADJUSTED PH	1.65		Std. Units
BUFFER SOLUTION PH	4.93		Std. Units
FINAL PH	5.71		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	21		Degrees C.
INITIAL TIME	05.30		HRS
FINAL TIME	09.30		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: C. HERRO		Analysis Date: 12-FEB-96	
		Test: P130.8.0	
Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0			
Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M603.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0346		Conc
SAMPLE + ADD 1	1.001		Conc
DILUTION	1		

BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M604.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
BARIUM	BDL	2.0	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.7704		Conc
SAMPLE + ADD 1	1.744		Conc
DILUTION	1		

CADMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M608.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.007	0.005	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0075		Conc
SAMPLE + ADD 1	0.9546		Conc
DILUTION	1		

CHROMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M610.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.01	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0017		Conc
SAMPLE + ADD 1	0.9828		Conc
DILUTION	1		

LEAD ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M616.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
LEAD	0.47	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.4758		Conc
SAMPLE + ADD 1	1.409		Conc
DILUTION	1		

SELENIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M628.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SELENIUM	BDL	0.10	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0015		Conc
SAMPLE + ADD 1	1.058		Conc
DILUTION	1		

SILVER ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M630.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SILVER	BDL	0.02	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	-0.0089		Conc
SAMPLE + ADD 1	0.8635		Conc
DILUTION	1		

MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A

Analyst: T. NOHA

Analysis Date: 12-FEB-96

Test: P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	10		mL
FINAL VOLUME	100		mL

MERCURY CVAA (1 POINT MSA) SW846-7470A

Analyst: T. NOHA

Analysis Date: 14-FEB-96

Instrument: CVAA

Test: M620.6.0

Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
MERCURY	BDL	0.005	mg/L
ADDITION 1	0.01		mg/L
SAMPLE	-0.00025		Conc
SAMPLE + ADD 1	0.0106		Conc
DILUTION	1		

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B

Analyst: H. QIAN

Analysis Date: 12-FEB-96

Test: P233.4.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	200		mL
FINAL VOLUME	1		mL

TCLP SEMIVOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8270B

Analyst: H. QIAN

Analysis Date: 13-FEB-96 14:04

Instrument: GC/MS SVOA

Test: 0514.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B P233.4.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	50	ug/L
2,4-DINITROTOLUENE	BDL	50	ug/L
HEXACHLOROBENZENE	BDL	50	ug/L
HEXACHLOROBUTADIENE	BDL	50	ug/L
HEXACHLOROETHANE	BDL	50	ug/L
NITROBENZENE	BDL	50	ug/L

Parameter	Result	Det. Limit	Units
PYRIDINE	BDL	250	ug/L
2-METHYLPHENOL (O-CRESOL)	BDL	130	ug/L
3-METHYLPHENOL (M-CRESOL)	BDL	130	ug/L
4-METHYLPHENOL (P-CRESOL)	BDL	130	ug/L
PENTACHLOROPHENOL	BDL	250	ug/L
2,4,5-TRICHLOROPHENOL	BDL	130	ug/L
2,4,6-TRICHLOROPHENOL	BDL	130	ug/L
...			
SURROGATE RECOVERY			
2-FLUOROPHENOL	59		% Rec
PHENOL-D5	50		% Rec
NITROBENZENE-D5	82		% Rec
2-FLUOROBIPHENYL	81		% Rec
2,4,6-TRIBROMOPHENOL	82		% Rec
TERPHENYL-D14	94		% Rec
1:1 dilution			
3 & 4 Methyl Phenol co-elute so identification is tentative.			

ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311

Analyst: T. MCDEVITT, JR.

Analysis Date: 09-FEB-96

Test: P108.1.0

Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	25.0		Grams
LIQUID FRACTION (GRAMS)	NA		Grams
LIQUID PORTION	NA		mL
EXTRACTED SAMPLE	25.0		Grams
PHASE 0 VOLUME (REP 0)	498		mL
PHASE 1 VOLUME (REP 1)	NA		mL
FINAL PH	6.02		Std. Units

TCLP VOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8240B

Analyst: G. SWANEY

Analysis Date: 12-FEB-96 14:12

Instrument: GC/MS: VOA

Test: 0513.3.0

Prep: ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311 P108.1.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	50	ug/L
CARBON TETRACHLORIDE	BDL	50	ug/L
CHLOROBENZENE	BDL	50	ug/L
CHLOROFORM	BDL	50	ug/L
1,2-DICHLOROETHANE	BDL	50	ug/L
1,1-DICHLOROETHYLENE	BDL	50	ug/L
METHYL ETHYL KETONE	BDL	100	ug/L
TETRACHLOROETHYLENE	BDL	50	ug/L
TRICHLOROETHYLENE	BDL	50	ug/L
VINYL CHLORIDE	BDL	100	ug/L
...			
SURROGATE RECOVERY			
DICHLOROETHANE-D4	99		% Rec
TOLUENE-D8	98		% Rec
4-BROMOFLUOROBENZENE	96		% Rec
1:10 dilution			

SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD)

Analyst: S. BUSSEY

Analysis Date: 13-FEB-96

Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.4		Grams
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080A

Analyst: S. BUSSEY

Analysis Date: 13-FEB-96

Instrument: GC/ECD

Test: 0301.2.0

Prep: SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD) P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.033	mg/kg
PCB AROCHLOR 1221	BDL	0.033	mg/kg
PCB AROCHLOR 1232	BDL	0.033	mg/kg
PCB AROCHLOR 1242	BDL	0.033	mg/kg
PCB AROCHLOR 1248	BDL	0.033	mg/kg
PCB AROCHLOR 1254	* 0.049	0.033	mg/kg
PCB AROCHLOR 1260	0.045	0.033	mg/kg
PCB AROCHLOR 1262	BDL	0.033	mg/kg

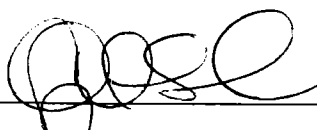
*Detection limit higher due to matrix interference.***Arochlor 1254 is estimated due to matrix interferences*

Sample Comments

* See Note for Parameter
BDL Below Detection Limit
NA Not Applicable

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Approved :



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	Received	Project	Lab ID
	09-FEB-96		C175477
	Complete	PO Number	
	22-FEB-96	E & E	
	Printed	Sampled	
	22-FEB-96	08-FEB-96 10:25	

Report To D. HENDREN ECOLOGY & ENVIRONMENT, INC. 77 WEST JACKSON BOULEVARD CHICAGO, IL 60604	Bill To ACCOUNTS PAYABLE ECOLOGY & ENVIRONMENT, INC. 111 WEST JACKSON BLVD. (12TH FLOOR) CHICAGO, IL 60604
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Sample Description CLIENT ID: PIT 3 ANALYTICAL TDD: S05-9602-803 SAMPLE I.D.: KOS-PIT 3 COMPOSITE

TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311			
Analyst: C. HERRO		Analysis Date: 09-FEB-96	
		Test: P107.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100.0		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	100.0		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	9.03		Std. Units
ADJUSTED PH	1.58		Std. Units
BUFFER SOLUTION PH	4.93		Std. Units
FINAL PH	5.76		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	21		Degrees C
INITIAL TIME	05.30		HRS
FINAL TIME	09.30		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: C. HERRO		Analysis Date: 12-FEB-96	
		Test: P130.8.0	
Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0			
Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M603.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0192		Conc
SAMPLE + ADD 1	0.9856		Conc
DILUTION	1		

BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M604.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
BARIUM	BDL	2.0	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.7948		Conc
SAMPLE + ADD 1	1.748		Conc
DILUTION	1		

CADMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M608.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.010	0.005	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0100		Conc
SAMPLE + ADD 1	0.9416		Conc
DILUTION	1		

CHROMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M610.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.01	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	-0.0024		Conc
SAMPLE + ADD 1	0.9592		Conc
DILUTION	1		

LEAD ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M616.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
LEAD	0.07	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.759		Conc
SAMPLE + ADD 1	1.022		Conc
DILUTION	1		

SELENIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M628.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SELENIUM	BDL	0.10	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0075		Conc
SAMPLE + ADD 1	1.040		Conc
DILUTION	1		

SILVER ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M630.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SILVER	BDL	0.02	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0045		Conc
SAMPLE + ADD 1	0.8276		Conc
DILUTION	1		

MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A

Analyst: T. NOHA

Analysis Date: 12-FEB-96

Test: P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	10		mL
FINAL VOLUME	100		mL

MERCURY CVAA (1 POINT MSA) SW846-7470A

Analyst: T. NOHA

Analysis Date: 14-FEB-96

Instrument: CVAA

Test: M620.6.0

Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
MERCURY	BDL	0.005	mg/L
ADDITION 1	0.01		mg/L
SAMPLE	-0.003		Conc
SAMPLE + ADD 1	0.0095		Conc
DILUTION	1		

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B

Analyst: H. QIAN

Analysis Date: 12-FEB-96

Test: P233.4.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	200		mL
FINAL VOLUME	1		mL

TCLP SEMIVOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8270B

Analyst: H. QIAN

Analysis Date: 13-FEB-96 14:45

Instrument: GC/MS SVOA

Test: 0514.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B P233.4.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	50	ug/L
2,4-DINITROTOLUENE	BDL	50	ug/L
HEXACHLOROBENZENE	BDL	50	ug/L
HEXACHLOROBUTADIENE	BDL	50	ug/L
HEXACHLOROETHANE	BDL	50	ug/L
NITROBENZENE	BDL	50	ug/L

Parameter	Result	Det. Limit	Units
PYRIDINE	BDL	250	ug/L
2-METHYLPHENOL (O-CRESOL)	BDL	130	ug/L
3-METHYLPHENOL (M-CRESOL)	BDL	130	ug/L
4-METHYLPHENOL (P-CRESOL)	BDL	130	ug/L
PENTACHLOROPHENOL	BDL	250	ug/L
2,4,5-TRICHLOROPHENOL	BDL	130	ug/L
2,4,6-TRICHLOROPHENOL	BDL	130	ug/L
...			
SURROGATE RECOVERY			
2-FLUOROPHENOL	54		% Rec
PHENOL-D5	46		% Rec
NITROBENZENE-D5	75		% Rec
2-FLUOROBIPHENYL	75		% Rec
2,4,6-TRIBROMOPHENOL	83		% Rec
TERPHENYL-D14	95		% Rec
1:1 dilution			
3 & 4 Methyl Phenol co-elute so identification is tentative.			

ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311

Analyst: T. MCDEVITT, JR.

Analysis Date: 09-FEB-96

Test: P108.1.0

Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	25.5		Grams
LIQUID FRACTION (GRAMS)	NA		Grams
LIQUID PORTION	NA		mL
EXTRACTED SAMPLE	25.5		Grams
PHASE 0 VOLUME (REP 0)	493		mL
PHASE 1 VOLUME (REP 1)	NA		mL
FINAL PH	5.71		Std. Units

TCLP VOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8240B

Analyst: G. SWANEY

Analysis Date: 12-FEB-96 14:47

Instrument: GC/MS VOA

Test: 0513.3.0

Prep: ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311 P108.1.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	50	ug/L
CARBON TETRACHLORIDE	BDL	50	ug/L
CHLOROBENZENE	BDL	50	ug/L
CHLOROFORM	BDL	50	ug/L
1,2-DICHLOROETHANE	BDL	50	ug/L
1,1-DICHLOROETHYLENE	BDL	50	ug/L
METHYL ETHYL KETONE	BDL	100	ug/L
TETRACHLOROETHYLENE	BDL	50	ug/L
TRICHLOROETHYLENE	BDL	50	ug/L
VINYL CHLORIDE	BDL	100	ug/L
...			
SURROGATE RECOVERY			
DICHLOROETHANE-D4	85		% Rec
TOLUENE-D8	98		% Rec
4-BROMOFLUOROBENZENE	97		% Rec

1:10 dilution

SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD)

Analyst: S. BUSSEY

Analysis Date: 13-FEB-96

Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.7		Grams
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080A

Analyst: S. BUSSEY

Analysis Date: 13-FEB-96

Instrument: GC/ECD

Test: 0301.2.0

Prep: SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD) P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.017	mg/kg
PCB AROCHLOR 1221	BDL	0.017	mg/kg
PCB AROCHLOR 1232	BDL	0.017	mg/kg
PCB AROCHLOR 1242	BDL	0.017	mg/kg
PCB AROCHLOR 1248	BDL	0.017	mg/kg
PCB AROCHLOR 1254	* 0.050	0.017	mg/kg
PCB AROCHLOR 1260	0.026	0.017	mg/kg
PCB AROCHLOR 1262	BDL	0.017	mg/kg

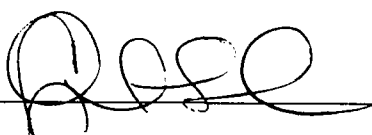
**Arochlor 1254 is estimated due to matrix interferences.*

Sample Comments

* See Note for Parameter
BDL Below Detection Limit
NA Not Applicable

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without the written approval of the lab.*

Approved :



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	Received	Project	Lab ID
	09-FEB-96		C175478
	Complete	PO Number	
	22-FEB-96	E & E	
	Printed	Sampled	
	22-FEB-96	08-FEB-96 11:00	

Report To D. HENDREN ECOLOGY & ENVIRONMENT, INC. 77 WEST JACKSON BOULEVARD CHICAGO, IL 60604	Bill To ACCOUNTS PAYABLE ECOLOGY & ENVIRONMENT, INC. 111 WEST JACKSON BLVD. (12TH FLOOR) CHICAGO, IL 60604
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Sample Description CLIENT ID: PIT 4 ANALYTICAL TDD: S05-9602-803 SAMPLE I.D.: KOS-PIT 4 COMPOSITE	
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TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311			
Analyst: C. HERRO		Analysis Date: 09-FEB-96	
		Test: P107.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100.7		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	100.7		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	9.00		Std. Units
ADJUSTED PH	1.62		Std. Units
BUFFER SOLUTION PH	4.93		Std. Units
FINAL PH	5.80		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	21		Degrees C
INITIAL TIME	05.30		HRS
FINAL TIME	09.30		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: C. HERRO		Analysis Date: 12-FEB-96	
		Test: P130.8.0	
Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0			
Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M603.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.25	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.2548		Conc
SAMPLE + ADD 1	1.211		Conc
DILUTION	1		

BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M604.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
BARIUM	BDL	2.0	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.9643		Conc
SAMPLE + ADD 1	1.890		Conc
DILUTION	1		

CADMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M608.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.010	0.005	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0103		Conc
SAMPLE + ADD 1	0.9456		Conc
DILUTION	1		

CHROMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M610.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.01	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	-0.0027		Conc
SAMPLE + ADD 1	0.9609		Conc
DILUTION	1		

LEAD ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M616.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	-0.0121		Conc
SAMPLE + ADD 1	0.9108		Conc
DILUTION	1		

SELENIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO Analysis Date: 12-FEB-96 23:30 Instrument: ICP Test: M628.7.0
 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SELENIUM	BDL	0.10	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0065		Conc
SAMPLE + ADD 1	1.060		Conc
DILUTION	1		

SILVER ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO Analysis Date: 12-FEB-96 23:30 Instrument: ICP Test: M630.7.0
 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SILVER	BDL	0.02	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	-0.0018		Conc
SAMPLE + ADD 1	0.8175		Conc
DILUTION	1		

MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A

Analyst: T. NOHA Analysis Date: 12-FEB-96 Test: P131.9.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	10		mL
FINAL VOLUME	100		mL

MERCURY CVAA (1 POINT MSA) SW846-7470A

Analyst: T. NOHA Analysis Date: 14-FEB-96 Instrument: CVAA Test: M620.6.0
 Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A P131.9.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
MERCURY	BDL	0.005	mg/L
ADDITION 1	0.01		mg/L
SAMPLE	-0.00025		Conc
SAMPLE + ADD 1	0.0106		Conc
DILUTION	1		

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B

Analyst: H. QIAN Analysis Date: 12-FEB-96 Test: P233.4.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	200		mL
FINAL VOLUME	1		mL

TCLP SEMIVOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8270B

Analyst: H. QIAN Analysis Date: 13-FEB-96 15:27 Instrument: GC/MS SVOA Test: 0514.3.0
 Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B P233.4.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	50	ug/L
2,4-DINITROTOLUENE	BDL	50	ug/L
HEXACHLOROBENZENE	BDL	50	ug/L
HEXACHLOROBUTADIENE	BDL	50	ug/L
HEXACHLOROETHANE	BDL	50	ug/L
NITROBENZENE	BDL	50	ug/L

Parameter	Result	Det. Limit	Units
PYRIDINE	BDL	250	ug/L
2-METHYLPHENOL (O-CRESOL)	BDL	130	ug/L
3-METHYLPHENOL (M-CRESOL)	BDL	130	ug/L
4-METHYLPHENOL (P-CRESOL)	BDL	130	ug/L
PENTACHLOROPHENOL	BDL	250	ug/L
2,4,5-TRICHLOROPHENOL	BDL	130	ug/L
2,4,6-TRICHLOROPHENOL	BDL	130	ug/L
...			
SURROGATE RECOVERY			
2-FLUOROPHENOL	52		% Rec
PHENOL-D5	44		% Rec
NITROBENZENE-D5	70		% Rec
2-FLUOROBIPHENYL	67		% Rec
2,4,6-TRIBROMOPHENOL	69		% Rec
TERPHENYL-D14	83		% Rec
1:1 dilution			
3 & 4 Methyl Phenol co-elute so identification is tentative.			

ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311

Analyst: T. MCDEVITT, JR.

Analysis Date: 09-FEB-96

Test: P108.1.0

Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	25.1		Grams
LIQUID FRACTION (GRAMS)	NA		Grams
LIQUID PORTION	NA		mL
EXTRACTED SAMPLE	25.1		Grams
PHASE 0 VOLUME (REP 0)	* 460		mL
PHASE 1 VOLUME (REP 1)	NA		mL
FINAL PH	5.82		Std. Units

*Filter clogged

TCLP VOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8240B

Analyst: G. SWANEY

Analysis Date: 12-FEB-96 15:22

Instrument: GC/MS VOA

Test: 0513.3.0

Prep: ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311 P108.1.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	50	ug/L
CARBON TETRACHLORIDE	BDL	50	ug/L
CHLOROBENZENE	BDL	50	ug/L
CHLOROFORM	BDL	50	ug/L
1,2-DICHLOROETHANE	BDL	50	ug/L
1,1-DICHLOROETHYLENE	BDL	50	ug/L
METHYL ETHYL KETONE	BDL	100	ug/L
TETRACHLOROETHYLENE	BDL	50	ug/L
TRICHLOROETHYLENE	BDL	50	ug/L
VINYL CHLORIDE	BDL	100	ug/L
...			
SURROGATE RECOVERY			
DICHLOROETHANE-D4	104		% Rec
TOLUENE-D8	97		% Rec
4-BROMOFLUOROBENZENE	101		% Rec

1:10 dilution

SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD)

Analyst: S. BUSSEY

Analysis Date: 13-FEB-96

Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.8		Grams
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080A

Analyst: S. BUSSEY

Analysis Date: 14-FEB-96

Instrument: GC/ECD

Test: 0301.2.0

Prep: SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD) P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.017	mg/kg
PCB AROCHLOR 1221	BDL	0.017	mg/kg
PCB AROCHLOR 1232	BDL	0.017	mg/kg
PCB AROCHLOR 1242	BDL	0.017	mg/kg
PCB AROCHLOR 1248	BDL	0.017	mg/kg
PCB AROCHLOR 1254	BDL	0.017	mg/kg
PCB AROCHLOR 1260	0.067 J	0.017	mg/kg
PCB AROCHLOR 1262	BDL	0.017	mg/kg

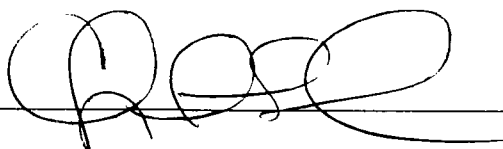
**Surrogate recoveries low due to matrix interferences.*

Sample Comments

* See Note for Parameter
BDL Below Detection Limit
NA Not Applicable

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without the written approval of the lab.*

Approved :



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEONVILLE, IL 60441 (708)378-1600	Received 09-FEB-96	Project	Lab ID C175479
	Complete 22-FEB-96	PO Number E & E	
	Printed 22-FEB-96	Sampled 08-FEB-96 11:45	

Report To D. HENDREN ECOLOGY & ENVIRONMENT, INC. 77 WEST JACKSON BOULEVARD CHICAGO, IL 60604	Bill To ACCOUNTS PAYABLE ECOLOGY & ENVIRONMENT, INC. 111 WEST JACKSON BLVD. (12TH FLOOR) CHICAGO, IL 60604
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Sample Description CLIENT ID: PIT 6 ANALYTICAL TDD: S05-9602-803 SAMPLE I.D.: KOS-PIT 6 COMPOSITE

TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311			
Analyst: C. HERRO		Analysis Date: 09-FEB-96	
		Test: P107.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100.0		Grams
LIQUID FRACTION (GRAMS)	NA		Grams
EXTRACTED SAMPLE	100.0		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	8.69		Std. Units
ADJUSTED PH	1.71		Std. Units
BUFFER SOLUTION PH	4.93		Std. Units
FINAL PH	5.99		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	21		Degrees C
INITIAL TIME	05.30		HRS
FINAL TIME	11.20		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: C. HERRO		Analysis Date: 13-FEB-96	
Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0		Test: P130.8.0	
Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 15-FEB-96 02:00

Instrument: ICP

Test: M603.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.05	mg/L
ADDITION 1	1.0		
SAMPLE	0.0346		
SAMPLE + ADD 1	0.9859		
DILUTION	1		

BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 15-FEB-96 02:00

Instrument: ICP

Test: M604.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
BARIUM	BDL	2.0	mg/L
ADDITION 1	1.0		
SAMPLE	0.3666		
SAMPLE + ADD 1	1.298		
DILUTION	1		

CADMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 15-FEB-96 02:00

Instrument: ICP

Test: M608.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.005	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0028		Conc
SAMPLE + ADD 1	0.9125		Conc
DILUTION	1		

CHROMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 15-FEB-96 02:00

Instrument: ICP

Test: M610.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.01	mg/L
ADDITION 1	1.0		
SAMPLE	0.0051		
SAMPLE + ADD 1	0.9242		
DILUTION	1		

LEAD ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 15-FEB-96 02:00

Instrument: ICP

Test: M616.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.05	mg/L
ADDITION 1	1.0		
SAMPLE	-0011		
SAMPLE + ADD 1	0.9232		
DILUTION	1		

SELENIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO Analysis Date: 15-FEB-96 02:00 Instrument: ICP Test: M628.7.0
 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SELENIUM	BDL	0.10	mg/L
ADDITION 1	1.0		
SAMPLE	-0.0231		
SAMPLE + ADD 1	1.025		
DILUTION	1		

SILVER ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO Analysis Date: 15-FEB-96 02:00 Instrument: ICP Test: M630.7.0
 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SILVER	BDL	0.02	mg/L
ADDITION 1	1.0		
SAMPLE	-0.0052		
SAMPLE + ADD 1	0.8875		
DILUTION	1		

MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A

Analyst: T. NOHA Analysis Date: 12-FEB-96 Instrument: CVAA Test: P131.9.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	10		mL
FINAL VOLUME	100		mL

MERCURY CVAA (1 POINT MSA) SW846-7470A

Analyst: T. NOHA Analysis Date: 14-FEB-96 Instrument: CVAA Test: M620.6.0
 Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A P131.9.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
MERCURY	BDL	0.005	mg/L
ADDITION 1	0.01		mg/L
SAMPLE	-0.003		Conc
SAMPLE + ADD 1	0.0100		Conc
DILUTION	1		

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B

Analyst: H. QIAN Analysis Date: 12-FEB-96 Instrument: GC/MS SVOA Test: P233.4.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	200		mL
FINAL VOLUME	1		mL

TCLP SEMIVOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8270B

Analyst: H. QIAN Analysis Date: 13-FEB-96 16:49 Instrument: GC/MS SVOA Test: 0514.3.0
 Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B P233.4.0
 Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	50	ug/L
2,4-DINITROTOLUENE	BDL	50	ug/L
HEXACHLOROBENZENE	BDL	50	ug/L
HEXACHLOROBUTADIENE	BDL	50	ug/L
HEXACHLOROETHANE	BDL	50	ug/L
NITROBENZENE	BDL	50	ug/L

Parameter	Result	Det. Limit	Units
PYRIDINE	BDL	250	ug/L
2-METHYLPHENOL (O-CRESOL)	BDL	130	ug/L
3-METHYLPHENOL (M-CRESOL)	BDL	130	ug/L
4-METHYLPHENOL (P-CRESOL)	BDL	130	ug/L
PENTACHLOROPHENOL	BDL	250	ug/L
2,4,5-TRICHLOROPHENOL	BDL	130	ug/L
2,4,6-TRICHLOROPHENOL	BDL	130	ug/L
...			
SURROGATE RECOVERY			

2-FLUOROPHENOL	49		
PHENOL-D5	42		
NITROBENZENE-D5	75		
2-FLUOROBIPHENYL	76		
2,4,6-TRIBROMOPHENOL	79		
TERPHENYL-D14	95		
1:1 dilution			
3 & 4 Methyl Phenol co-elute so identification is tentative.			

ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311

Analyst: T. MCDEVITT, JR.

Analysis Date: 09-FEB-96

Test: P108.1.0

Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	24.9		Grams
LIQUID FRACTION (GRAMS)	NA		Grams
LIQUID PORTION	NA		mL
EXTRACTED SAMPLE	24.9		Grams
PHASE 0 VOLUME (REP 0)	478		mL
PHASE 1 VOLUME (REP 1)	NA		mL
FINAL PH	5.84		Std. Units

TCLP VOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8240B

Analyst: G. SWANEY

Analysis Date: 12-FEB-96 15:57

Instrument: GC/MS VOA

Test: 0513.3.0

Prep: ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311 P108.1.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	50	ug/L
CARBON TETRACHLORIDE	BDL	50	ug/L
CHLOROBENZENE	BDL	50	ug/L
CHLOROFORM	BDL	50	ug/L
1,2-DICHLOROETHANE	BDL	50	ug/L
1,1-DICHLOROETHYLENE	BDL	50	ug/L
METHYL ETHYL KETONE	BDL	100	ug/L
TETRACHLOROETHYLENE	BDL	50	ug/L
TRICHLOROETHYLENE	BDL	50	ug/L
VINYL CHLORIDE	BDL	100	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	97		% Rec
TOLUENE-D8	95		% Rec
4-BROMOFLUOROBENZENE	99		% Rec
1:10 dilution			

SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD)

Analyst: S. BUSSEY

Analysis Date: 13-FEB-96

Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.1		Grams
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080A

Analyst: S. BUSSEY

Analysis Date: 13-FEB-96

Instrument: GC/ECD

Test: 0301.2.0

Prep: SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD) P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.017	mg/kg
PCB AROCHLOR 1221	BDL	0.017	mg/kg
PCB AROCHLOR 1232	BDL	0.017	mg/kg
PCB AROCHLOR 1242	BDL	0.017	mg/kg
PCB AROCHLOR 1248	BDL	0.017	mg/kg
PCB AROCHLOR 1254	BDL	0.017	mg/kg
PCB AROCHLOR 1260	BDL	0.017	mg/kg
PCB AROCHLOR 1262	BDL	0.017	mg/kg

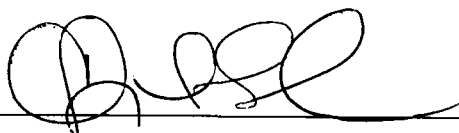
Surrogate recoveries low due to matrix interferences.

Sample Comments

BDL Below Detection Limit
NA Not Applicable

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without the written approval of the lab.*

Approved :



C E R T I F I C A T E O F A N A L Y S I S

Service Location HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	Received	Project	Lab ID
	09-FEB-96		C175480
	Complete	PO Number	
	22-FEB-96	E & E	
	Printed	Sampled	
	22-FEB-96	08-FEB-96 11:00	

Report To D. HENDREN ECOLOGY & ENVIRONMENT, INC. 77 WEST JACKSON BOULEVARD CHICAGO, IL 60604	Bill To ACCOUNTS PAYABLE ECOLOGY & ENVIRONMENT, INC. 111 WEST JACKSON BLVD. (12TH FLOOR) CHICAGO, IL 60604
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Sample Description CLIENT ID: PIT B ANALYTICAL TDD: S05-9602-803 SAMPLE I.D.: KOS-PIT B COMPOSITE

TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311			
Analyst: C. HERRO		Analysis Date: 09-FEB-96	
		Test: P107.1.0	
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	101.2		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	101.2		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	8.11		Std. Units
ADJUSTED PH	1.85		Std. Units
BUFFER SOLUTION PH	4.93		Std. Units
FINAL PH	6.03		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	21		Degrees C
INITIAL TIME	05.30		HRS
FINAL TIME	09.30		HRS
PHASE 0 VOLUME (REP 0)	NA		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: C. HERRO		Analysis Date: 12-FEB-96	
		Test: P130.8.0	
Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0			
Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M603.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.23	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.2359		Conc
SAMPLE + ADD 1	1.179		Conc
DILUTION	1		

BARIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M604.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
BARIUM	BDL	2.0	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	1.211		Conc
SAMPLE + ADD 1	2.197		Conc
DILUTION	1		

CADMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M608.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.010	0.005	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0098		Conc
SAMPLE + ADD 1	0.9104		Conc
DILUTION	1		

CHROMIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M610.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.01	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	-0.0042		Conc
SAMPLE + ADD 1	0.9307		Conc
DILUTION	1		

LEAD ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M616.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	-0.0308		Conc
SAMPLE + ADD 1	0.8796		Conc
DILUTION	1		

SELENIUM ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M628.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SELENIUM	BDL	0.10	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.0025		Conc
SAMPLE + ADD 1	1.013		Conc
DILUTION	1		

SILVER ICP (1 POINT MSA) SW846-6010A

Analyst: C. HERRO

Analysis Date: 12-FEB-96 23:30

Instrument: ICP

Test: M630.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
SILVER	BDL	0.02	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	-0.0067		Conc
SAMPLE + ADD 1	0.8291		Conc
DILUTION	1		

MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A

Analyst: T. NOHA

Analysis Date: 12-FEB-96

Test: P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	10		mL
FINAL VOLUME	100		mL

MERCURY CVAA (1 POINT MSA) SW846-7470A

Analyst: T. NOHA

Analysis Date: 14-FEB-96

Instrument: CVAA

Test: M620.6.0

Prep: MERCURY CVAA ACID DIGESTION (LEACHATE) SW846-7470A P131.9.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
MERCURY	BDL	0.005	mg/L
ADDITION 1	0.01		mg/L
SAMPLE	-0.003		Conc
SAMPLE + ADD 1	0.0106		Conc
DILUTION	1		

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B

Analyst: H. QIAN

Analysis Date: 12-FEB-96

Test: P233.4.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	200		mL
FINAL VOLUME	1		mL

TCLP SEMIVOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8270B

Analyst: H. QIAN

Analysis Date: 13-FEB-96 16:08

Instrument: GC/MS SVOA

Test: 0514.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510B P233.4.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP W/ ORGANICS) SW846-1311 P107.1.0

Parameter	Result	Det. Limit	Units
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	50	ug/L
2,4-DINITROTOLUENE	BDL	50	ug/L
HEXACHLOROBENZENE	BDL	50	ug/L
HEXACHLOROBUTADIENE	BDL	50	ug/L
HEXACHLOROETHANE	BDL	50	ug/L
NITROBENZENE	BDL	50	ug/L

Parameter	Result	Det. Limit	Units
PYRIDINE	BDL	250	ug/L
2-METHYLPHENOL (O-CRESOL)	BDL	130	ug/L
3-METHYLPHENOL (M-CRESOL)	BDL	130	ug/L
4-METHYLPHENOL (P-CRESOL)	BDL	130	ug/L
PENTACHLOROPHENOL	BDL	250	ug/L
2,4,5-TRICHLOROPHENOL	BDL	130	ug/L
2,4,6-TRICHLOROPHENOL	BDL	130	ug/L
...			
SURROGATE RECOVERY			

2-FLUOROPHENOL	53		% Rec
PHENOL-D5	44		% Rec
NITROBENZENE-D5	89		% Rec
2-FLUOROBIPHENYL	78		% Rec
2,4,6-TRIBROMOPHENOL	75		% Rec
TERPHENYL-D14	93		% Rec
1:1 dilution			
3 & 4 Methyl Phenol co-elute so identification is tentative.			

ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311

Analyst: A. JAGIELSKI

Analysis Date: 10-FEB-96

Test: P108.1.0

Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	25.2		Grams
LIQUID FRACTION (GRAMS)	NA		Grams
LIQUID PORTION	NA		mL
EXTRACTED SAMPLE	25.2		Grams
PHASE 0 VOLUME (REP 0)	* 442		mL
PHASE 1 VOLUME (REP 1)	NA		mL
FINAL PH	5.83		Std. Units

Possible leakage of vessel of #1

*Filter clogged

TCLP VOLATILE ORGANICS (TOXICITY CHARACTERISTIC) SW846-8240B

Analyst: G. SWANEY

Analysis Date: 12-FEB-96 16:32

Instrument: GC/MS VOA

Test: 0513.3.0

Prep: ZERO HEADSPACE EXTRACTION (TCLP) SW846-1311 P108.1.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	50	ug/L
CARBON TETRACHLORIDE	BDL	50	ug/L
CHLOROBENZENE	BDL	50	ug/L
CHLOROFORM	BDL	50	ug/L
1,2-DICHLOROETHANE	BDL	50	ug/L
1,1-DICHLOROETHYLENE	BDL	50	ug/L
METHYL ETHYL KETONE	BDL	100	ug/L
TETRACHLOROETHYLENE	BDL	50	ug/L
TRICHLOROETHYLENE	BDL	50	ug/L
VINYL CHLORIDE	BDL	100	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	101		% Rec
TOLUENE-D8	99		% Rec
4-BROMOFLUOROBENZENE	97		% Rec

1:10 dilution

SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD)

Analyst: S. BUSSEY

Analysis Date: 13-FEB-96

Test: P231.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.7		Grams
FINAL VOLUME	10		mL

POLYCHLORINATED BIPHENYLS (PCBS) SW846-8080A

Analyst: S. BUSSEY

Analysis Date: 14-FEB-96

Instrument: GC/ECD

Test: 0301.2.0

Prep: SONICATION EXTRACTION FOR ORGANICS SW846-3550(MOD) P231.1.0

Parameter	Result	Det. Limit	Units
PCB AROCHLOR 1016	BDL	0.017	mg/kg
PCB AROCHLOR 1221	BDL	0.017	mg/kg
PCB AROCHLOR 1232	BDL	0.017	mg/kg
PCB AROCHLOR 1242	BDL	0.017	mg/kg
PCB AROCHLOR 1248	BDL	0.017	mg/kg
PCB AROCHLOR 1254	BDL	0.017	mg/kg
PCB AROCHLOR 1260	0.062	0.017	mg/kg
PCB AROCHLOR 1262	BDL	0.017	mg/kg

Sample Comments

* See Note for Parameter
BDL Below Detection Limit
NA Not Applicable

*This Certificate shall not be reproduced, except in full,
without the written approval of the lab.*

Approved :

